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Hook there is a dominant northward current; from the former place to Delaware bay a southward one. This current can be seen and traced in many places. Its geographic effect is chiefly the migration of material (and hence of inlets) from the center towards the two extremities of the State. This opposition of movement cannot be due to the fact that the northern half is in the lee of Long Island, and thus while northeast winds dominate farther south they are overpowered by southeast winds there, for at Sandy Hook or Long Branch the northeast storms are as severe as at Atlantic City.

The reason given by the U. S. C. S. (1856) for this northward movement cannot be correct; for upon examining the region we see that ever so strong a draught through False Hook channel would not cause a steady and strong current as far south as Manasquan inlet. The explanation must be sought in the effect of submarine topography upon the tides, which near shore move as waves of translation. This effect seems to be chiefly the formation of nodal points of secondary importance in the three great tidal bays of the Atlantic coast. The same phenomenon occurs on the south shore of Long Island, and on the east shore of Cape Cod. These secondary nodes are joints of divergence of currents, and must be caused by inequalities of the great continental delta which we do not now recognize.

While the author considers tidal action to be dominant here, he does not believe it to be the exclusive agent of transformation. The direction and amount depend upon the resultant of all the factors tending to produce movement, and wind waves form a very considerable element in this. But that wind waves do not control it is proved by the fact that the current continues northward against adverse winds, and can only be momentarily reversed by long continued and violent storms.

Transportation is mainly off-shore, by bar migration; but a small amount can be observed along the strand, demonstrably propelled by currents and not by waves. Most of the movement here, however, is caused by wave impact and the reflex flow of water.

The deposition is little affected by currents, for much of it is made upon the outside of Sandy

Hook, at a place where the current enters the mouth of False Hook channel, and hence is, if anything, stronger than farther south. But with a constant current deposition often varies with direction and intensity of wind.

It is worthy of note that the point of divergence of the northward and southward currents is so located that the wing, Sandy Hook, is receiving all the waste from the wearing-back of the soft headland of Cretaceous and Tertiary age which extends from Bay Head to Low Moor; while of the transportation along the barrier beaches southward none comes from the headland. Thus these beaches are only carrying their own detritus, piled up at an earlier stage, and are wasting themselves away.

T. A. JAGGAR, JR.,  
*Recording Secretary.*

#### THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of April 20th Dr. C. M. Woodward presented the results of a study of certain statistics of school attendance, from which it appeared that the average age of withdrawal from the public schools in three cities compared was as follows: Boston, 15.8; Chicago, 14.6; St. Louis, 13.7.

Prof. J. H. Kinealy exhibited and gave a mathematical discussion of the Stang planimeter, an interesting and simple instrument of Danish invention, but improved in the United States.

WILLIAM TRELEASE,  
*Recording Secretary.*

#### NEW BOOKS.

*A History of the Warfare of Science with Theology in Christendom.* ANDREW D. WHITE. New York, D. Appleton & Co. 1896. Vol. I., pp. xxiii+415; vol. II., pp. xxiii+474. \$5.00.

*A Dictionary of Chemical Solubilities.* ARTHUR MESSINGER COMEY. London and New York, Macmillan & Co. 1896. Pp. xx+515. \$5.00.

*Current Superstitions.* FANNY D. BERGEN. Boston and New York, published for the American Folk-Lore Society by Houghton, Mifflin & Co. 1896. Pp. x+161.

*Plane and Solid Geometry.* C. A. VAN VELTZER and GEORGE G. SHUTTS. Madison, Wis., Tracy, Gibbs & Co. Pp. viii+395.